ARIZ 105c
July 15, 2005
(6 Pages)

SAMPLING SOILS AND AGGREGATES

(An Arizona Method)

SCOPE

1. (a) This procedure describes the methods which are to be used when sampling soils and aggregates.

(b) Sampling soils and aggregates by this procedure may involve hazardous material, operations, or equipment. This procedure does not purport to address all of the safety concerns associated with its use. It is the responsibility of the user to consult and establish appropriate safety and health practices and determine the applicability of any regulatory limitations prior to use.

SAMPLING FROM STOCKPILES

2. Due to the tendency of aggregate to segregate, extreme care must be used to obtain a truly representative sample. Place a wood or metal shield upslope from the point of sampling to prevent loose aggregate from sliding down into the sampling area. Remove approximately 3 to 6 inches of material from the sampling area. Utilizing a square point shovel, take a sample near the top, at the middle, and near the bottom of the stockpile. The sample taken at each sampling location shall be one shovelful of material. Repeat this operation at the sampling locations as shown in Figure 1, and combine all samples taken from the stockpile.

SAMPLING FROM BINS

3. A sample shall be taken by passing a sampling device through the entire cross-section of the flow of material as it is being discharged (see Figures 2 and 3). Sufficient material shall be allowed to pass at the beginning of discharge to ensure uniformity of material before the sample is taken. Repeat sampling procedure as necessary until the desired amount of material from each bin is obtained. Material from each bin shall be properly identified.

SAMPLING FROM A CONVEYOR BELT

4. Sampling from a conveyor belt may be performed either while the conveyor belt is running (by using a sampling device which diverts or intercepts the flow of material) or by taking a sample while the conveyor belt is stopped. The stopped belt method is also used when approving a sampling device used for sampling while the belt is running.

(a) If the sample is obtained while the conveyor belt is running, samples of the aggregate shall be taken utilizing a sampling device to divert or intercept the entire flow of material in such a manner that all portions of the flow are diverted or intercepted for an equal amount of time.

(b) Samples may be obtained by stopping the conveyor belt and sampling the full width of the belt utilizing a template which is shaped to the contour of the belt. All material which is within the template area shall be removed, utilizing a brush to obtain all the fine aggregate material.

SAMPLING FROM A WINDROW

5. Figure 4 illustrates the method used to sample a windrow. At each point in the windrow where a sample is to be taken, remove sufficient material from the top of the windrow so that a representative sample can be obtained from the center of the freshly exposed top of the windrow using a square point shovel. The sample taken at each sampling location shall be one shovelful of material. Repeat the sampling as necessary, at the required number of locations in the windrow, to obtain the desired amount of material. The samples taken shall be combined.

SAMPLING FROM THE ROADWAY

6. In the case of sampling material in-place from the roadway, at least 3 samples shall be taken with a shovel at equally distributed locations across the width of the roadway. It may be necessary to use a hammer and chisel or similar tool to cut the hole in the compacted roadway. Samples shall be taken to the depth of the lift of material which is being tested. Care shall be taken to obtain all material from the hole which is dug. The samples taken shall be combined.

REDUCING FIELD SAMPLES TO TESTING SIZE

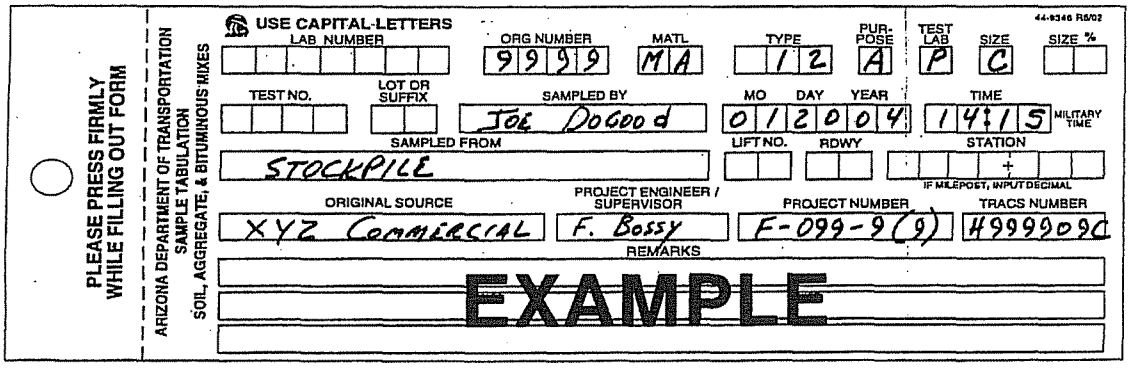
7. The reduction of samples to obtain the amount of material required for particular tests shall be performed in accordance with AASHTO T 248.

SAMPLE IDENTIFICATION

8. (a) Each sample shall be identified by an accompanying sample ticket. Sample tickets shall be filled out as required to provide necessary information. The remarks area of the sample ticket should be used as necessary to provide additional information.

(b) The source of the sample shall be the "original source" of the material, as indicated on the sample ticket.

(c) An example of a completed sample ticket used by ADOT for construction projects is given below.



(d) The sample ticket consists of three copies. The center copy is kept by the person submitting the sample, the original copy is included inside the sample container, and the third copy is attached to the sample container. When filling out sample tickets, make certain information is clear and easily read on all three copies.

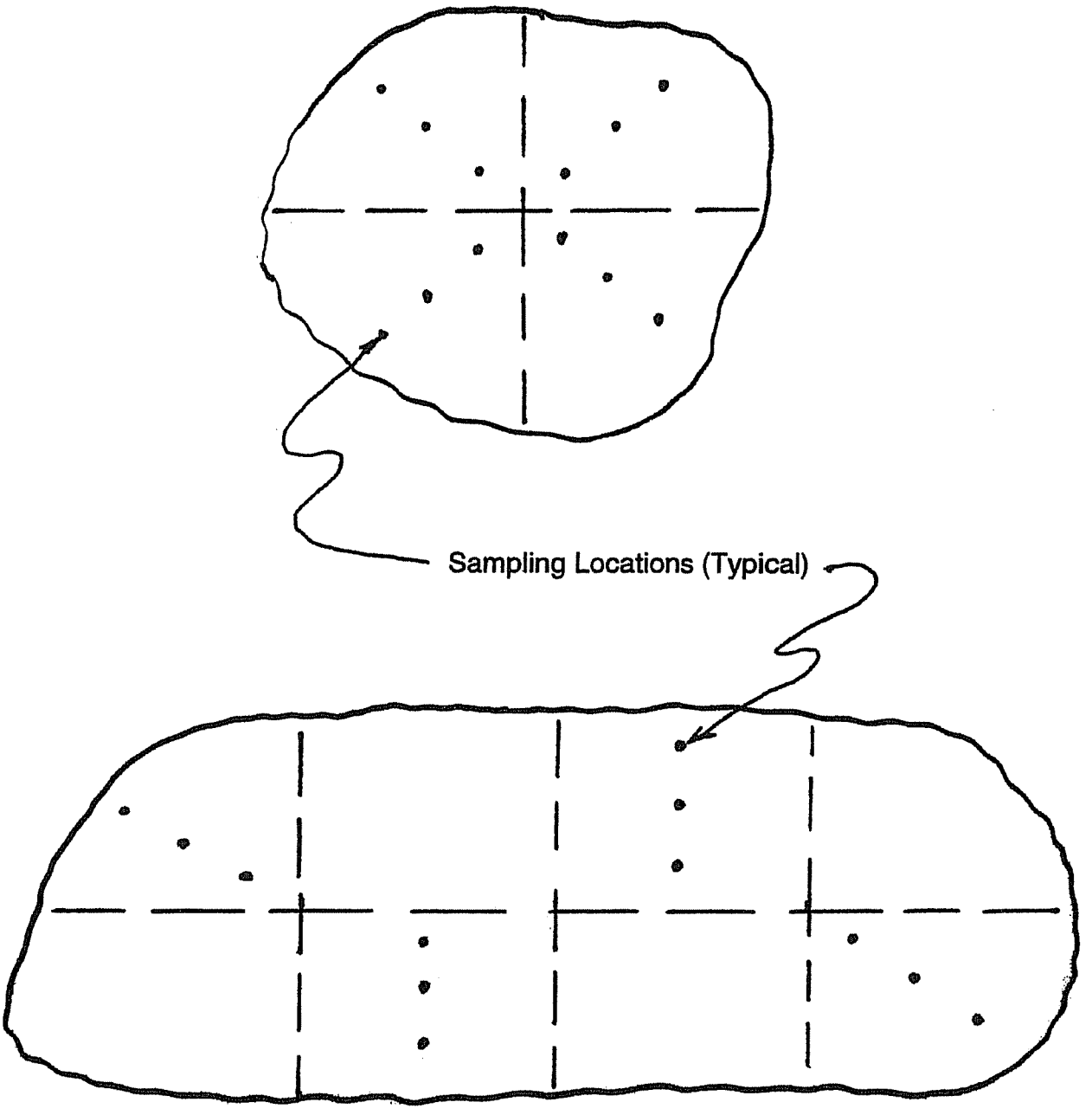
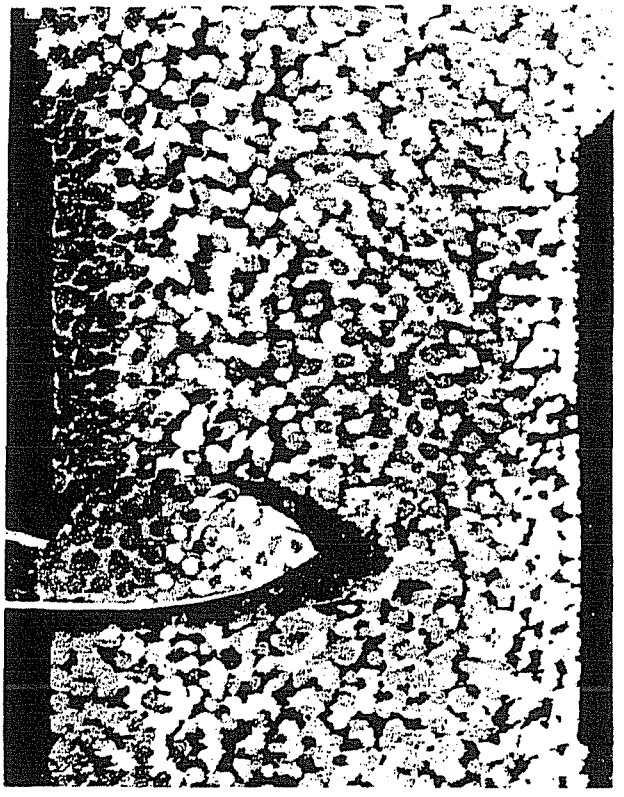


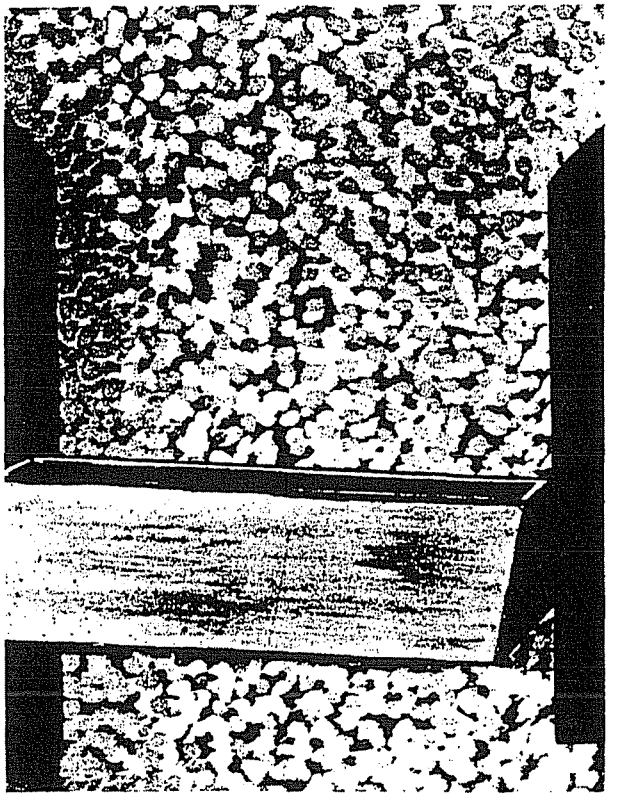
Illustration of Sampling Locations for Different Stockpile Types

FIGURE 1



WRONG

When aggregate is passed over a screen, the fines tend to drop through immediately and accumulate on one side of the hopper. A sample taken with a shovel or other small container will not be representative.

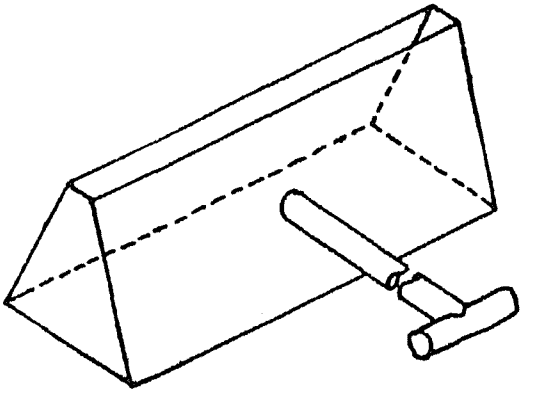


RIGHT

A sample taken by inserting the sampling device through the full flow of material will yield a representative sample. The restricted opening prevents the sampling device from filling all at once.

Illustration of Bin Sampling

FIGURE 2



Typical Bin Sampler

FIGURE 3

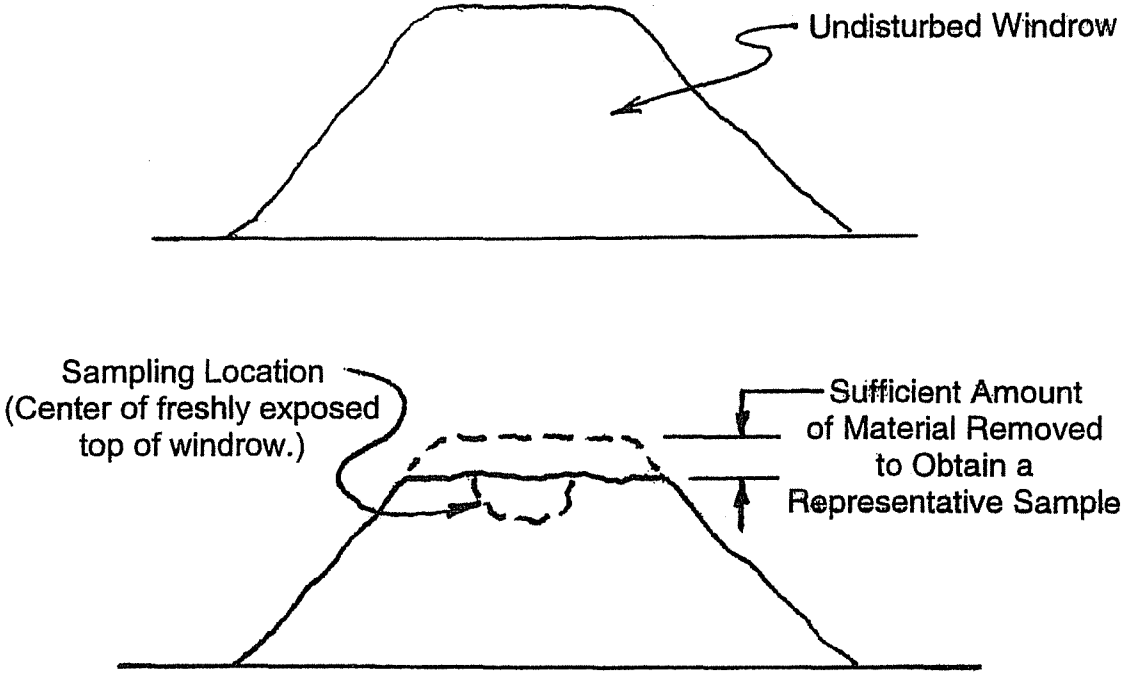


Illustration of Sampling From a Windrow

FIGURE 4